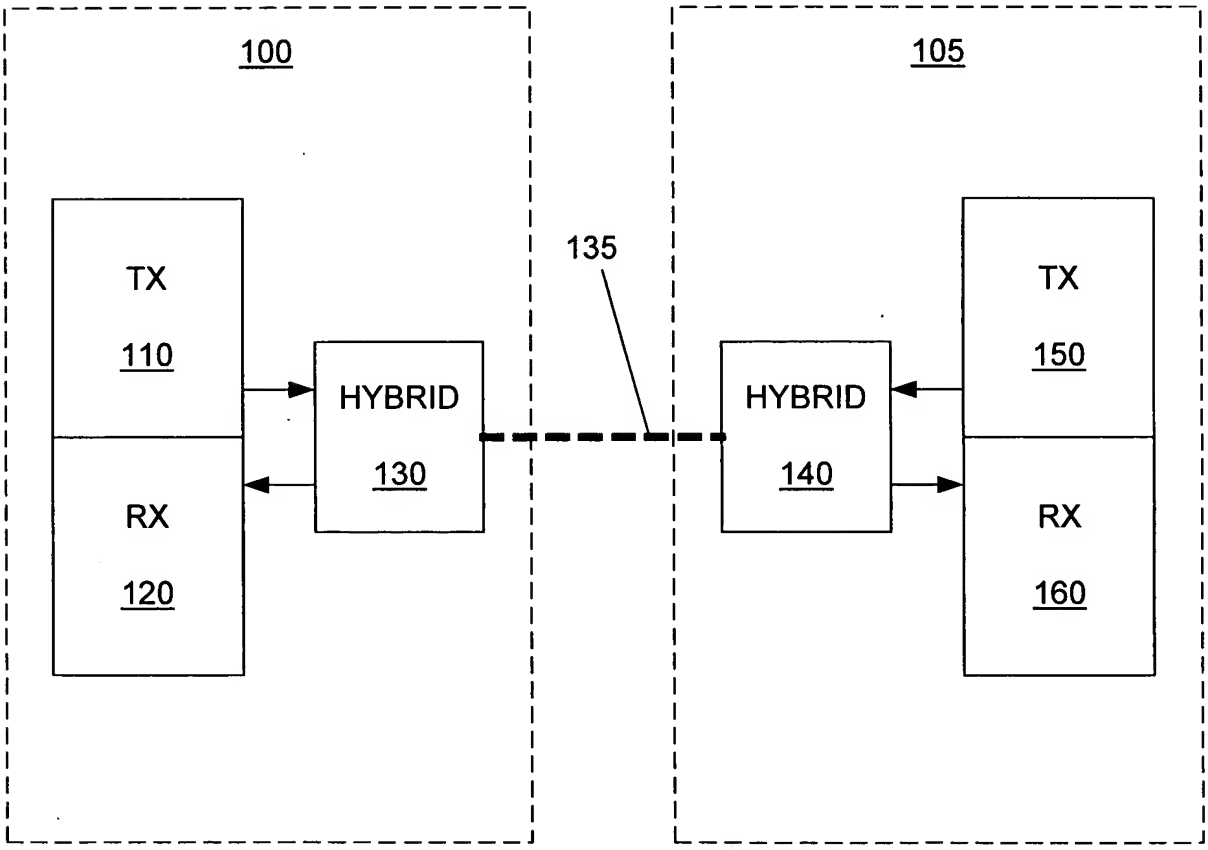

FIGURE 1 (PRIOR ART)

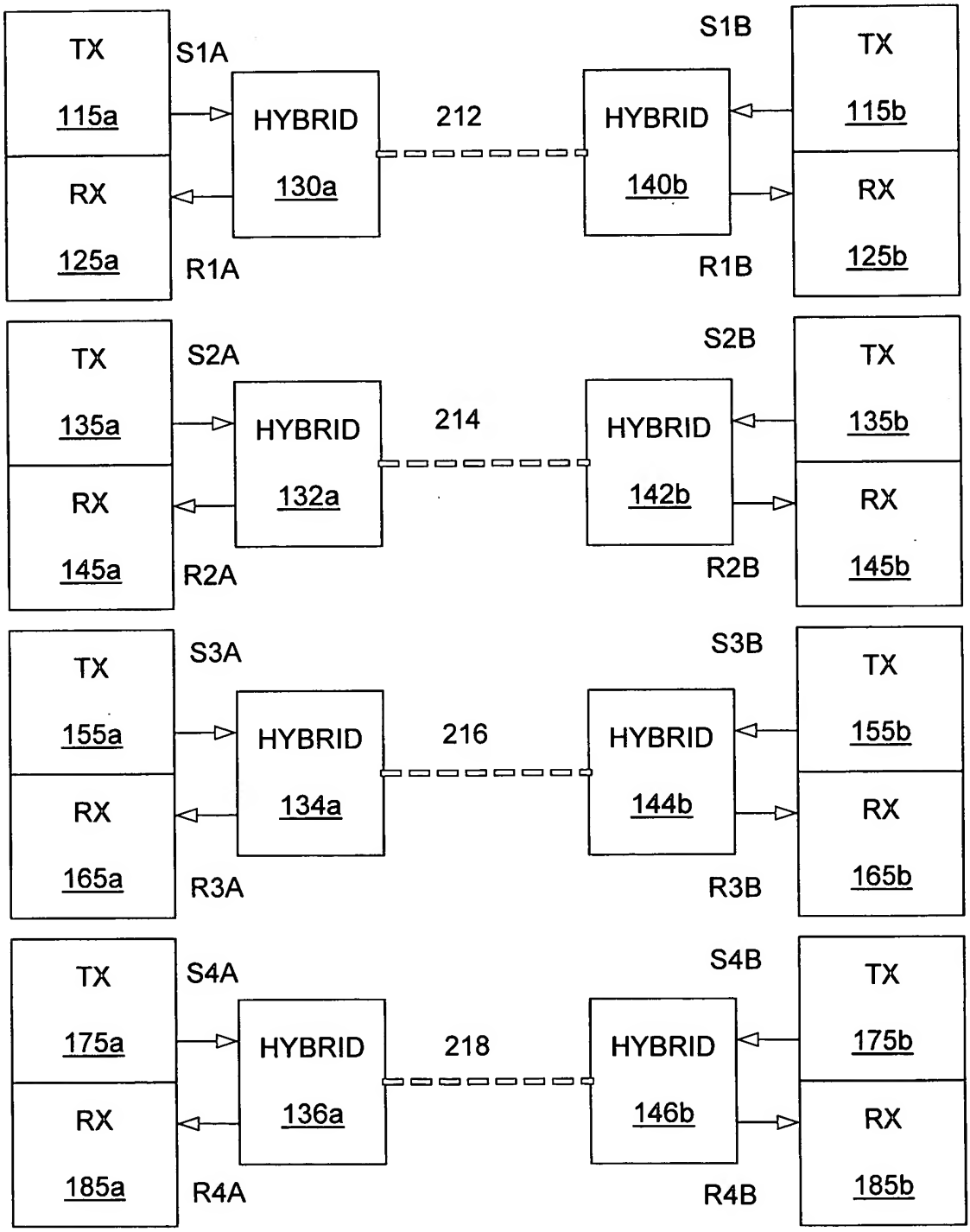

FIGURE 2 (PRIOR ART)

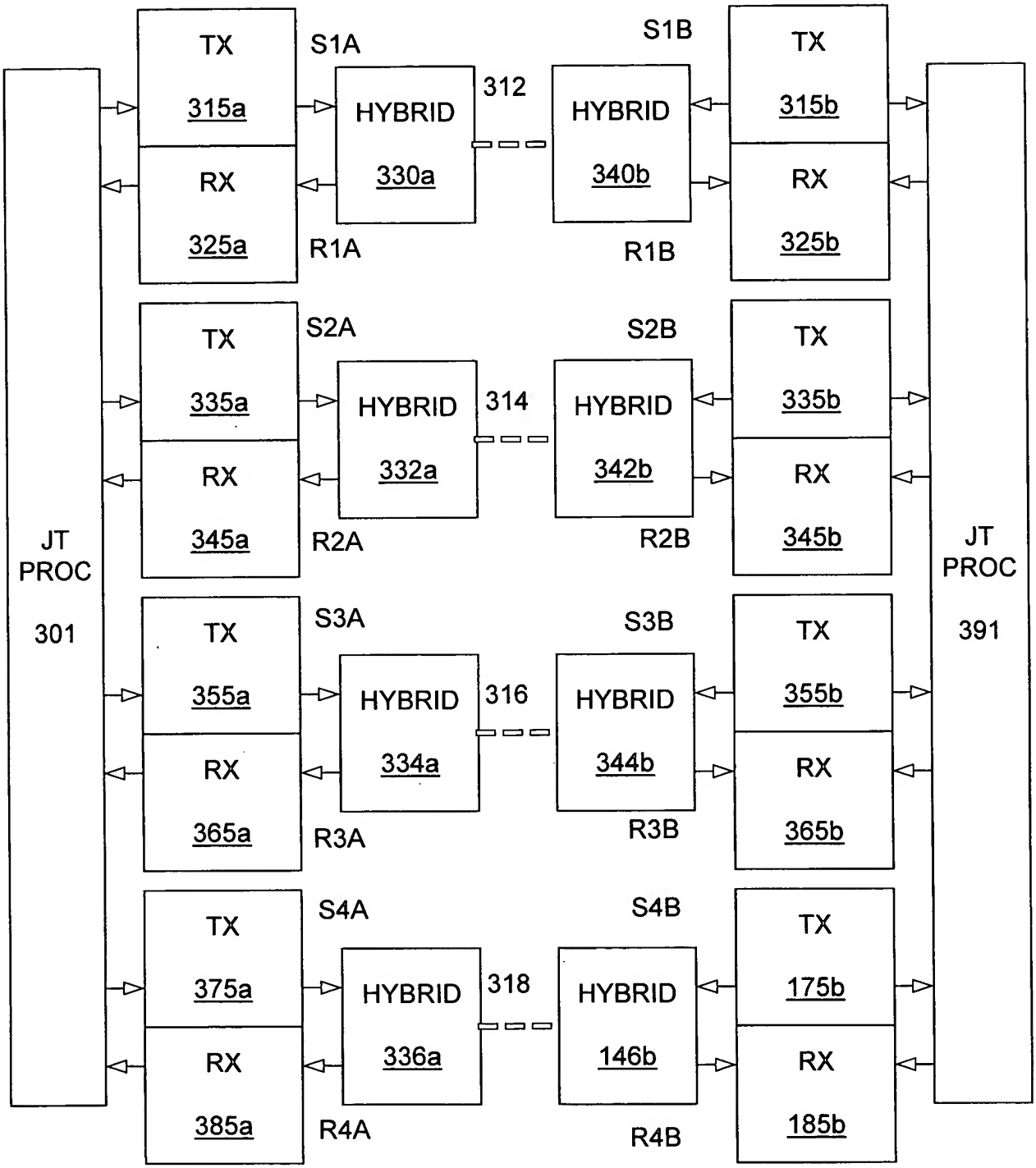
JT PROC 301
TX 315a
RX 325a
S1A
HYBRID 330a
312
HYBRID 340b
S1B
TX 315b
RX 325b
JT PROC 391
R1A
R1B
TX 335a
RX 345a
S2A
HYBRID 332a
314
HYBRID 342b
S2B
TX 335b
RX 345b
R2A
R2B
TX 355a
RX 365a
S3A
HYBRID 334a
316
HYBRID 344b
S3B
TX 355b
RX 365b
R3A
R3B
TX 375a
RX 385a
S4A
HYBRID 336a
318
HYBRID 146b
S4B
TX 175b
RX 185b
R4A
R4B

FIGURE 3

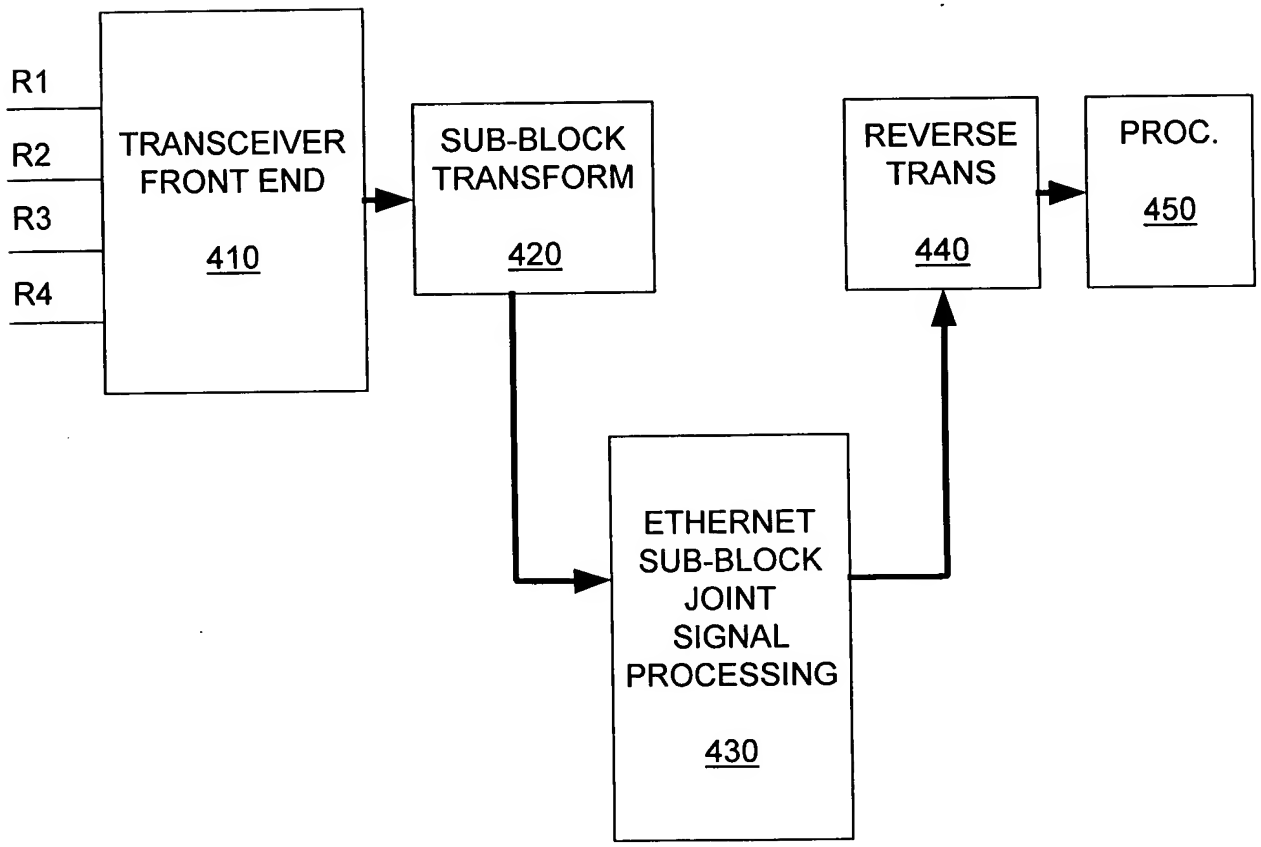
R1
R2
R3
R4
TRANSCEIVER FRONT END
410
SUB-BLOCK TRANSFORM
420
REVERSE TRANS
440
PROC.
450
ETHERNET SUB-BLOCK JOINT SIGNAL PROCESSING
430

FIGURE 4

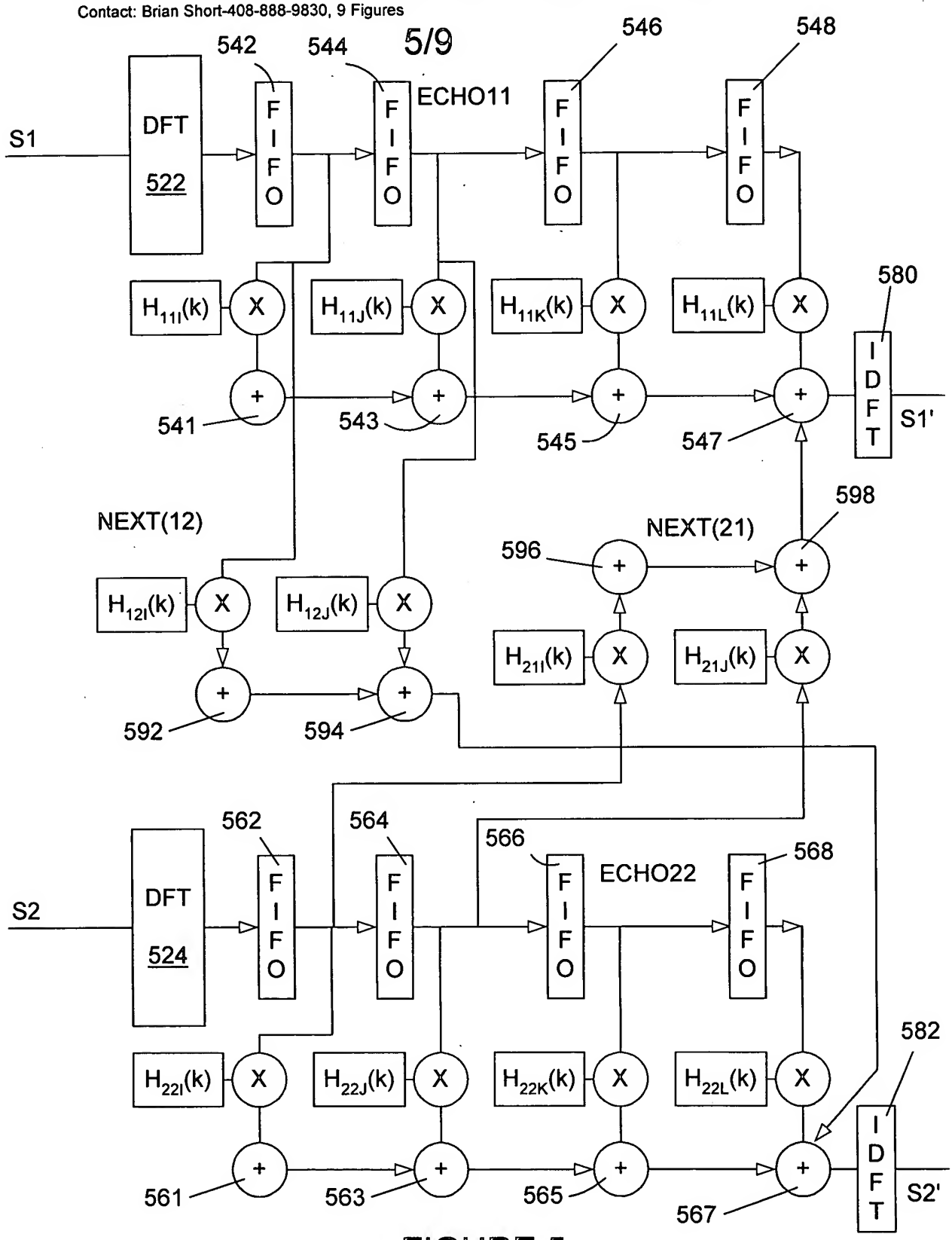
S1
DFT
522
542
544
546
548
FIFO
ECHO11
$H_{11I}(k)$
$H_{11J}(k)$
$H_{11K}(k)$
$H_{11L}(k)$
X
+
541
543
545
547
580
IDFT
S1'
NEXT(12)
NEXT(21)
598
596
$H_{12I}(k)$
$H_{12J}(k)$
$H_{21I}(k)$
$H_{21J}(k)$
592
594
S2
562
564
566
568
ECHO22
$H_{22I}(k)$
$H_{22J}(k)$
$H_{22K}(k)$
$H_{22L}(k)$
561
563
565
567
582
S2'

FIGURE 5

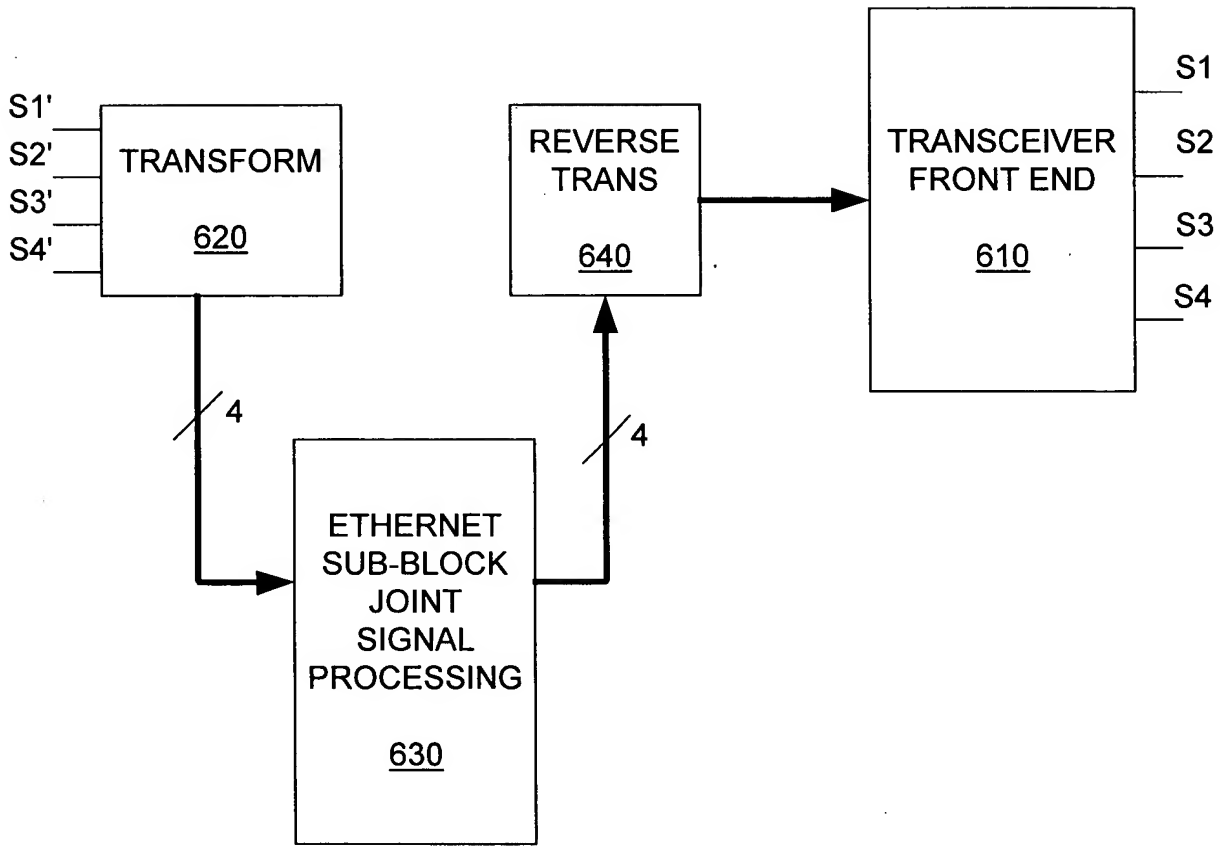
S1'
S2'
S3'
S4'
TRANSFORM
620
4
ETHERNET
SUB-BLOCK
JOINT
SIGNAL
PROCESSING
630
4
REVERSE
TRANS
640
TRANSCEIVER
FRONT END
610
S1
S2
S3
S4

FIGURE 6

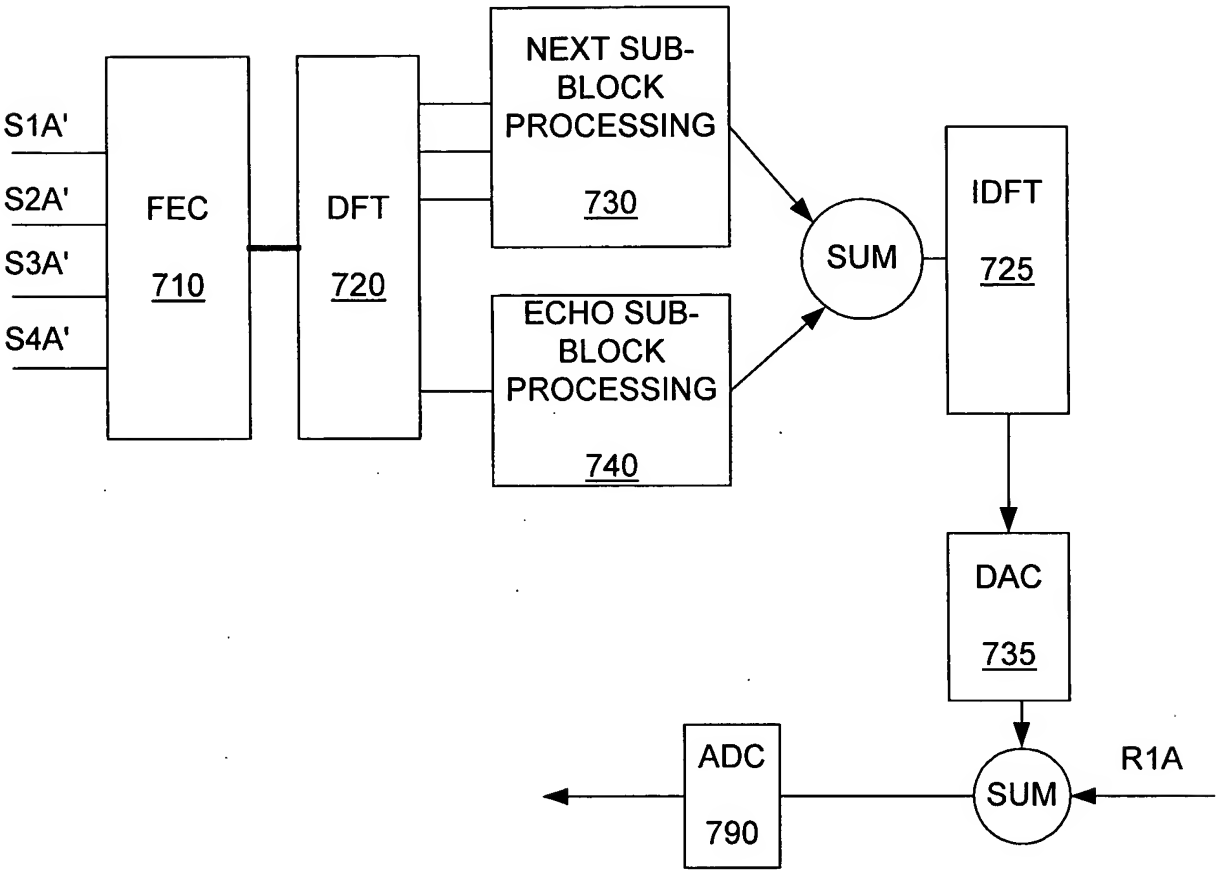
S1A'
S2A'
S3A'
S4A'
FEC
710
DFT
720
NEXT SUB-BLOCK PROCESSING
730
ECHO SUB-BLOCK PROCESSING
740
SUM
IDFT
725
DAC
735
ADC
790
SUM
R1A

FIGURE 7

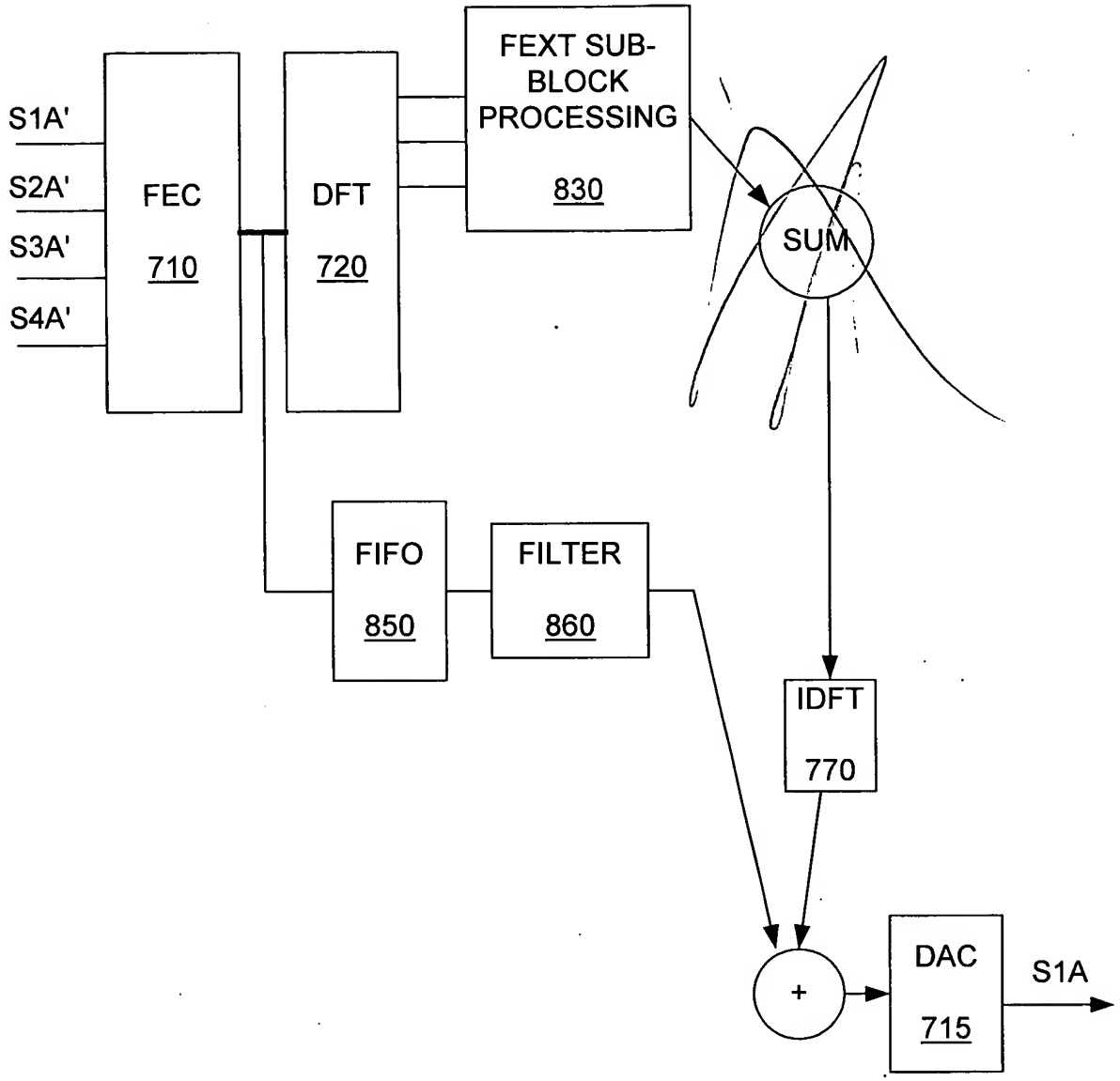
S1A'
S2A'
S3A'
S4A'
FEC
710
DFT
720
FEXT SUB-BLOCK PROCESSING
830
SUM
FIFO
850
FILTER
860
IDFT
770
+
DAC
715
S1A

FIGURE 8

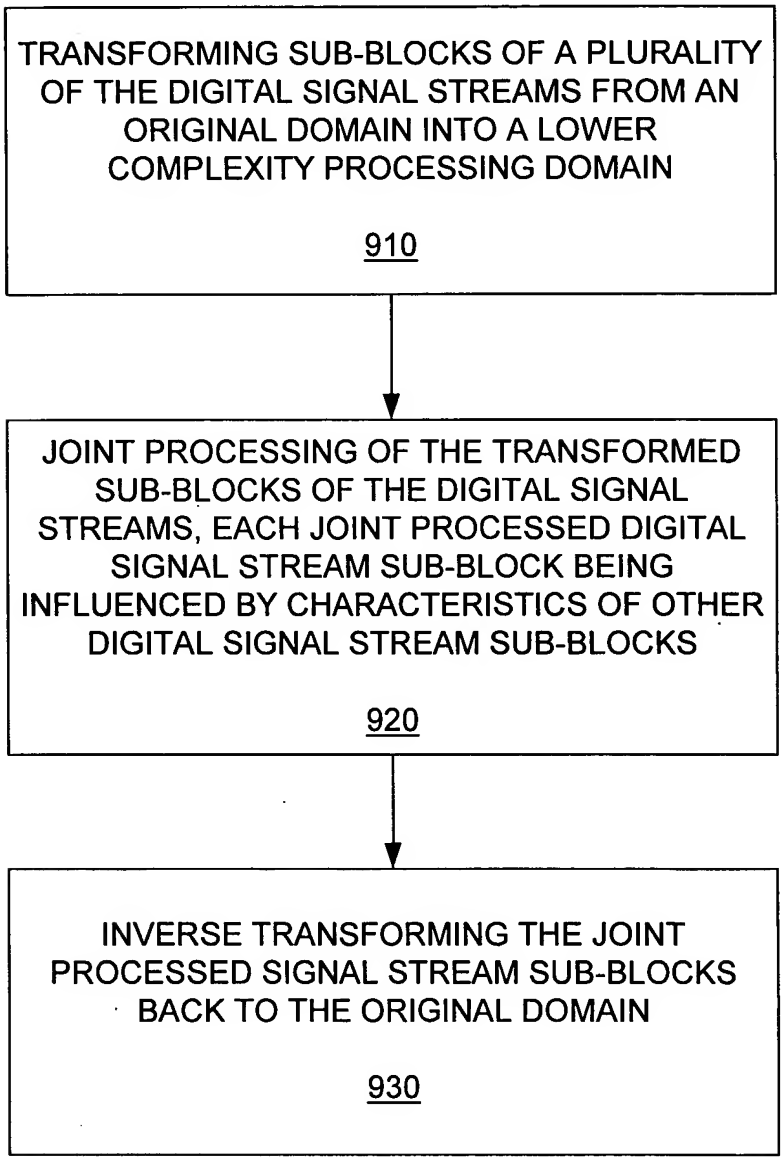
TRANSFORMING SUB-BLOCKS OF A PLURALITY OF THE DIGITAL SIGNAL STREAMS FROM AN ORIGINAL DOMAIN INTO A LOWER COMPLEXITY PROCESSING DOMAIN
910
JOINT PROCESSING OF THE TRANSFORMED SUB-BLOCKS OF THE DIGITAL SIGNAL STREAMS, EACH JOINT PROCESSED DIGITAL SIGNAL STREAM SUB-BLOCK BEING INFLUENCED BY CHARACTERISTICS OF OTHER DIGITAL SIGNAL STREAM SUB-BLOCKS
920
INVERSE TRANSFORMING THE JOINT PROCESSED SIGNAL STREAM SUB-BLOCKS BACK TO THE ORIGINAL DOMAIN
930

FIGURE 9